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Use of Clostridial Vaccines by Feedlots

National Animal Health Monitoring System

Clostridial diseases have been a concern of cattlemen for many years. Since clostridial diseases are often rapidly fatal and effective vaccines are available, many producers view vaccination as cheap insurance.

However, some clostridial vaccinations have been associated with injection lesions and concern has developed for prudent use of clostridial vaccination. The **National Cattlemen's Association's Beef Quality Assurance (BQA) Task Force** developed a series of recommendations that included:

- After the primary immunization with clostridial bacterins, repeat or multiple injections should be discontinued, especially late in the feeding period.
- Intramuscular (I.M.) injections for all products should be avoided whenever other "labeled" routes of administration are available.

Clostridial vaccination is very common in feedlots, especially those with a capacity of 1,000 or more head of cattle. Data from the USDA's Cattle on Feed Evaluation (COFE) suggest that the recommendations of the BQA task force have only been partially adopted by the industry.

In the fall of 1994, the National Animal Health Monitoring System (NAHMS) contacted producers with feedlots of less than 1,000 head capacity by telephone and visited producers with larger feedlots from the 13 primary cattle feeding states.[1] The cattle inventory in the 13 states was approximately 85 percent of the national inventory as of January 1, 1994, and the 13 states fed in excess of 85 percent of the total cattle fed for harvest in the United States. Large-capacity operations comprised 4 percent of feedlots, but accounted for 83.3 percent of total feedlot inventory for the 13 states as of January 1, 1994. During the COFE, 913 small-capacity and 453 large-capacity feedlot producers responded to interview questions about operation management and health of their animals. Results were weighted to represent all small and large feedlots from the 13 states.

Table 1

Use of Clostridial Vaccines in Feedlots by Type of Feedlot

Type of Feedlot			
Capacity	Annual Placements	Percent Operations	Percent Cattle
<1000	—	34.4	44.6
1000+	<10,000	89.1	87.1
1000+	10,000-39,999	95.2	91.1
1000+	40,000+	95.9	93.6

Only 34.4 percent of feedlots with less than 1,000 head capacity reported any clostridial vaccination of cattle placed on feed (Table 1). In contrast, approximately 91 percent of larger feedlots vaccinated against one or more clostridial agents. Among these larger feedlots, the most common disease vaccinated for was enterotoxemia (Cl. perfringens type C and D, 89.7 percent of feedlots). Similar percentages of large feedlots vaccinated for blackleg (Cl. chauvoei, 88.6 percent) and malignant edema (Cl. septicum, 87.5 percent).

A high proportion of cattle placed in larger feedlots, and thus a high proportion of all cattle, were vaccinated for some clostridial diseases (Table 1). In fact, with the exception of redwater (Cl. hemolyticum) and tetanus (Cl. tetani), over 80 percent of all the cattle placed on feed in larger feedlots were vaccinated for the common clostridial agents (Table 2 on the next page).

1 Arizona, California, Colorado, Idaho, Illinois, Iowa, Kansas, Minnesota, Nebraska, Oklahoma, South Dakota, Texas, and Washington.

Clostridial vaccination was more common among large feedlots in the Central and South Central regions compared to those in the West and Midwest regions (Figure 1). This trend was similar for each of the specific clostridial agents with the exception of Cl. hemolyticum (redwater) which was most commonly vaccinated for in the West, likely due to the increased concern for fluke infestation of cattle in the west. (Flukes can be responsible for liver damage that accompanies the development of redwater.)

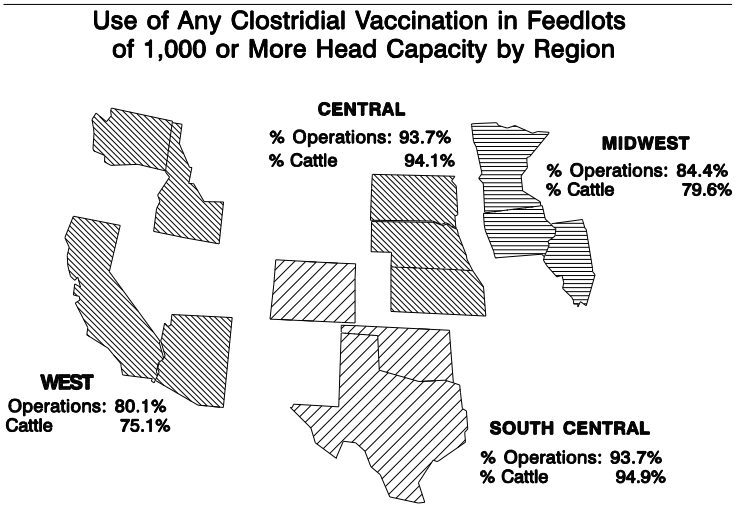
Over 40 percent of large feedlots that used a clostridial vaccine used more than one clostridial injection in their cattle. Multiple injections may occur at the same time or cattle may have been re-vaccinated at a later time. Overall, **23.1 percent of cattle placed in large feedlots using clostridial vaccinations received more than one clostridial injection.** Since multivalent vaccines for clostridia are readily available, these multiple injections probably represented revaccination of cattle while in the feedlot. This speculation is consistent with COFE data indicating that 65.1 percent of large feedlots processed cattle a second time within 30 days after arrival. Overall, 24.4 percent of cattle were reported to be processed a second time within 30 days of arrival.

Table 2

Cattle Placed in Feedlots of 1,000 or More Head Capacity That Received Vaccinations for Clostridial Diseases

	Annual Number of Placements		
Disease	≤10,000	10,000-39,999	40,000+
Cl. perfringens C & D	85.0	88.0	93.4
Cl. chauvoei	84.9	87.9	82.0
Cl. septicum	83.9	86.5	80.9
Cl. sordellii	83.1	85.7	80.0
Cl. novyi	82.6	86.9	80.9
Cl. hemolyticum	33.3	41.1	27.5
Cl. tetani	8.6	4.3	2.8

Figure 1



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Some duplication of effort may be occurring with regard to clostridial vaccination. A previous study of the cow/calf segment of the industry[1] revealed that over 60 percent of producers vaccinated calves for clostridial diseases. After accounting for the size of the operations using vaccines, approximately 80 percent of calves produced on cow/calf operations have been vaccinated for some of the clostridial antigens.

Given the efficacy of clostridial vaccines, multiple vaccinations in the feedlot could be unnecessary and even contraindicated when the potential for quality defects is considered. **If the feedlot operator could know the vaccine history of incoming animals to the feedyard, perhaps this redundancy in the system could be eliminated and along with it, a portion of the injection lesion problem.**

NAHMS collaborators included the National Agricultural Statistics Service (USDA), State and Federal Veterinary Medical Officers, and the National Veterinary Services Laboratories (USDA:APHIS:VS). For more information contact:

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1 Results of the National Animal Health Monitoring System's Beef Cow/Calf Health and Productivity Audit are available from the source listed at the end of this article. Results pertain to cow/calf operations with at least five cows or heifers that calved primarily in the spring and were from one of the 18 states with the largest beef cow numbers.